

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
23 June 2005 (23.06.2005)

PCT

(10) International Publication Number  
**WO 2005/057059 A1**

(51) International Patent Classification<sup>7</sup>: **F16J 15/52**,  
G01N 11/14 // D21G 9/00

(21) International Application Number:  
PCT/FI2004/000758

(22) International Filing Date:  
13 December 2004 (13.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
20031829 15 December 2003 (15.12.2003) FI

(71) Applicant (for all designated States except US): **METSO  
AUTOMATION OY** [FI/FI]; Tulppatie 1, FI-00880  
Helsinki (FI).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HELASUO, Jarmo**

[FI/FI]; Kaskipuunkaari 6 E 13, FI-02340 Espoo (FI). **RU-  
OSAARI, Olli** [FI/FI]; Huvilinnanmäki 10 A 13, FI-02600  
Espoo (FI). **LAUKKANEN, Kari** [FI/FI]; Ketuntie 6,  
FI-02970 Espoo (FI).

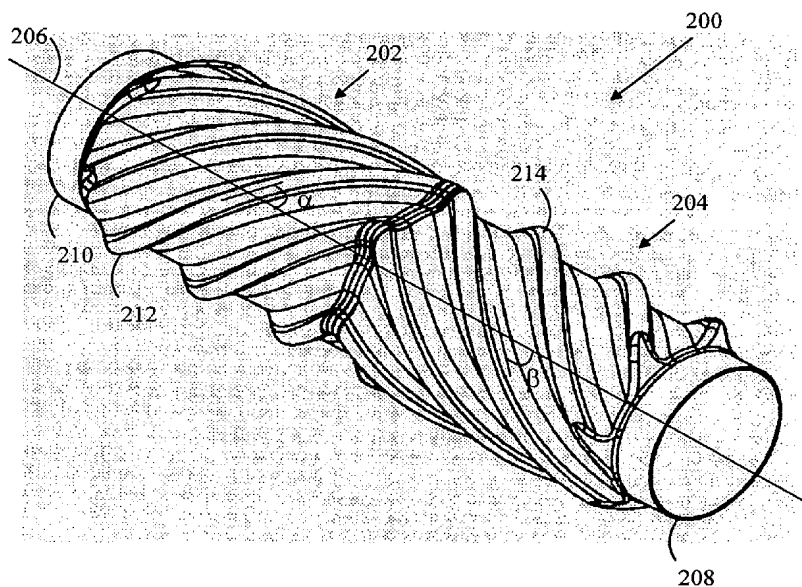
(74) Agent: **KOLSTER OY AB**; Iso Roobertinkatu 23, P.O.  
Box 148, FI-00121 Helsinki (FI).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

[Continued on next page]

(54) Title: SEAL FOR MEASURING DEVICE



(57) Abstract: The invention relates to a seal intended for sealing an axis pair, whereby the axes rotate in the same direction, the inner one of the axes is inside the outer axis and the phase difference of the axes is arranged to remain within prede-fined limits. The seal (200) is a tubular seal made of an elastic material and comprises at least two tube sections (202, 204) fixed to each other. Folds (212, 214) of the at least two tube sections (202, 204) have opposing twisting angles. One end of the seal (200) is fastened to the outer axis and the other end is fastened to the inner axis, and the seal (200) is arranged to twist by a torque proportional to the phase difference between the axes.

WO 2005/057059 A1



FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,  
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments*

**Published:**

— *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.*